

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings of claims in the application:

**LISTING OF CLAIMS:**

1           1. (Currently amended) A method of forming a peptide conjugate  
2 comprising a covalent linkage between a modifying group and a glycosylated or non-  
3 glycosylated peptide, wherein said modifying group is conjugated to the peptide via a glycosyl  
4 linking group interposed between and covalently linked to both said peptide and said modifying  
5 group, said method comprising:

6           a. contacting a cell with a modified sugar comprising a sugar-sialic acid moiety  
7 ~~and covalently functionalized with~~ at least one modifying group, wherein said ~~at least one~~  
8 modifying group is a ~~member independently selected from the group consisting of a water-~~  
9 ~~soluble polymer, a therapeutic moiety, a detectable label, a biomolecule and a targeting moiety;~~

10           b. incubating said cell under conditions in which said cell internalizes said  
11 modified sugar;

12           c. after step b, intracellularly contacting said modified sugar with a glycosylated  
13 or non-glycosylated peptide and a glycosyltransferase for which said modified sugar is a  
14 substrate, thereby forming said peptide conjugate.

1           2. (Original) The method of claim 1, further comprising, after step b and  
2 before step c, intracellularly contacting said modified sugar with a nucleotide and a nucleotidyl  
3 transferase, thereby forming a modified nucleotide sugar, wherein  
4           said modified sugar in step c is said modified nucleotide sugar.

1           3. (Original) The method of claim 1, further comprising isolating said  
2 peptide conjugate.

1                   4. (Original) The method of claim 1, wherein said modified sugar is a  
2 modified nucleotide sugar.

1                   5. (Original) The method of claim 1, wherein said modified sugar is a  
2 modified activated sugar.

1                   6. (Original) The method of claim 1, wherein said glycosyl linking group is  
2 an intact glycosyl linking group.

1                   7. (Original) The method of claim 1, wherein said modified sugar is a  
2 precursor modified sugar that is intracellularly converted to an intermediate modified sugar by  
3 cellular enzymes after step b and before step c.

1                   8. (Original) The method of claim 7, wherein said intermediate modified  
2 sugar is a phosphorylated modified sugar, wherein said phosphorylated modified sugar is formed  
3 by intracellularly contacting said modified sugar with a kinase for which said modified sugar is a  
4 substrate, thereby forming a phosphorylated modified nucleotide sugar.

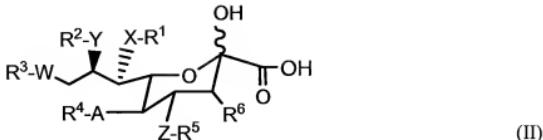
1                   9. (Original) The method of claim 1, wherein said water-soluble polymer  
2 comprises poly(ethylene glycol).

1                   10. (Original) The method of claim 10, wherein said poly(ethylene glycol)  
2 has a molecular weight distribution that is essentially homodisperse.

1                   11. (Cancel)

1                   12. (Cancel)

1                   13. (Currently amended) The method of claim ~~11~~ 1, wherein said modified  
2 sugar has the formula



3

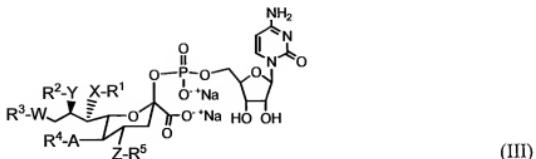
4 wherein,

5 W, X, Y, Z, and A are members independently selected from a bond, substituted  
6 or unsubstituted alkylene, substituted or unsubstituted heteroalkylene,  
7 substituted or unsubstituted cycloalkylene, substituted or unsubstituted  
8 heterocycloalkylene, substituted or unsubstituted arylene, substituted or  
9 unsubstituted heteroarylene, -O-, -N(R<sup>7</sup>), -S-, and -CH<sub>2</sub>-, wherein,  
10 R<sup>7</sup> is a member independently selected from hydrogen, substituted or  
11 unsubstituted alkyl, substituted or unsubstituted heteroalkyl, substituted or  
12 unsubstituted cycloalkyl, substituted or unsubstituted heterocycloalkyl,  
13 substituted or unsubstituted aryl, and substituted or unsubstituted  
14 heteroaryl; and

15 R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup> and R<sup>6</sup> are members independently selected from -OH, -  
16 NH<sub>2</sub>, -SH, hydrogen, substituted or unsubstituted alkyl, substituted or  
17 unsubstituted heteroalkyl, substituted or unsubstituted cycloalkyl,  
18 substituted or unsubstituted heterocycloalkyl, substituted or unsubstituted  
19 aryl, substituted or unsubstituted heteroaryl, and a modifying group  
20 water-soluble polymer, wherein at least one of R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup> and R<sup>6</sup> is said  
21 modifying group water-soluble polymer.

1 14. (Cancel)

1 15. (Currently amended) The method of claim 14, wherein said modified  
2 nucleotide sugar has the formula



3       wherein,

4       W, X, Y, Z, and A are members independently selected from a bond, substituted  
5       or unsubstituted alkylene, substituted or unsubstituted heteroalkylene,  
6       substituted or unsubstituted cycloalkylene, substituted or unsubstituted  
7       heterocycloalkylene, substituted or unsubstituted arylene, substituted or  
8       unsubstituted heteroarylene,  $-O-$ ,  $-N(R^7)-$ ,  $-S-$ , and  $-CH_2-$ , wherein,  
9       R<sup>7</sup> is a member independently selected from hydrogen, substituted or  
10      unsubstituted alkyl, substituted or unsubstituted heteroalkyl, substituted or  
11      unsubstituted cycloalkyl, substituted or unsubstituted heterocycloalkyl,  
12      substituted or unsubstituted aryl, and substituted or unsubstituted  
13      heteroaryl; and

14      R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, and R<sup>5</sup> are independently selected from  $-OH$ ,  $-NH_2$ ,  $-SH$ ,  
15      hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted  
16      heteroalkyl, substituted or unsubstituted cycloalkyl, substituted or  
17      unsubstituted heterocycloalkyl, substituted or unsubstituted aryl, substituted or  
18      unsubstituted heteroaryl, and a modifying groupwater-soluble polymer,  
19      wherein at least one of R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, and R<sup>5</sup> is a modifying groupsaid water-  
20      soluble polymer.

1       16. (Cancel)

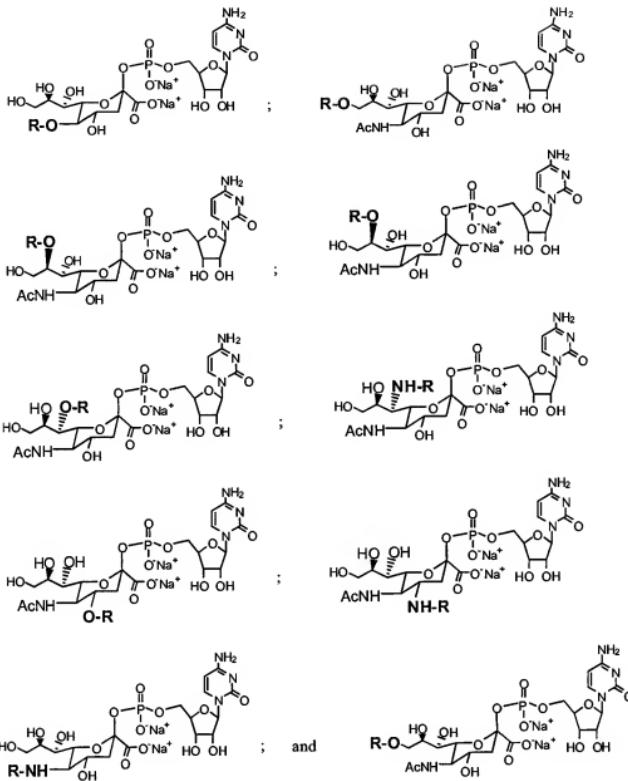
1       17. (Original) The method of claim 1, wherein said peptide is selected from  
2       the group consisting of granulocyte colony stimulating factor, interferon-alpha, interferon-beta,  
3       Factor VIIa, Factor IX, follicle stimulating hormone, erythropoietin, granulocyte macrophage  
4       colony stimulating factor, interferon-gamma, alpha-1-protease inhibitor, glucocerebrosidase,  
5       tissue plasminogen activator protein, interleukin-2, Factor VIII, chimeric tumor necrosis factor  
6       receptor, urokinase, chimeric anti-glycoprotein IIb/IIIa antibody, chimeric anti-HER2 antibody,

7 chimeric anti-respiratory syncytial virus antibody, chimeric anti-CD20 antibody, DNase,  
8 chimeric anti-tumor necrosis factor antibody, human insulin, hepatitis B sAg, interferon-omega,  
9 alpha-galactosidase A, alpha-iduronidase, anti-thrombin III, human chorionic gonadotropin, and  
10 human growth hormone.

1                   **18.**    (Withdrawn) A cell comprising a peptide conjugate, said peptide  
2 conjugate comprising:  
3                   (i) a modifying group and a peptide, wherein said modifying group is linked to said  
4                   peptide via a glycosyl linking group interposed between and covalently linked to  
5                   both the peptide and said modifying group; and  
6                   (ii) said modifying group is a member independently selected from the group consisting  
7                   of a water-soluble polymer, a therapeutic moiety, a detectable label, and a  
8                   targeting moiety.

1                   **19.**    (Withdrawn) The method of claim **18**, wherein said glycosyl linking  
2 group is an intact glycosyl linking group.

3                   **20.**    (New) The method according to claim **2**, said modified nucleotide sugar  
4                   having a formula which is a member selected from:



5

6 wherein

7 R is said water-soluble polymer.

1        21. (New) The method according to claim 1 wherein said water-soluble polymer is a  
2 poly(alkylene oxide) selected from linear poly(alkylene oxide) and branched poly(alkylene  
3 oxide).

1           22. (New) The method according to claim 20 wherein said water-soluble polymer is  
2 a poly(alkylene oxide) selected from linear poly(alkylene oxide) and branched poly(alkylene  
3 oxide).

1                   23. (New) The method according to claim 1 wherein said modified sugar has the  
2 formula:

